

Name: _____

Yr11 Chem Revision 13/8/20

①

Answer ALL questions.

1 Chromatography can be used to separate the substances in a mixture.

(a) Diagram 1 shows the apparatus used to separate the different dyes in a food colouring.

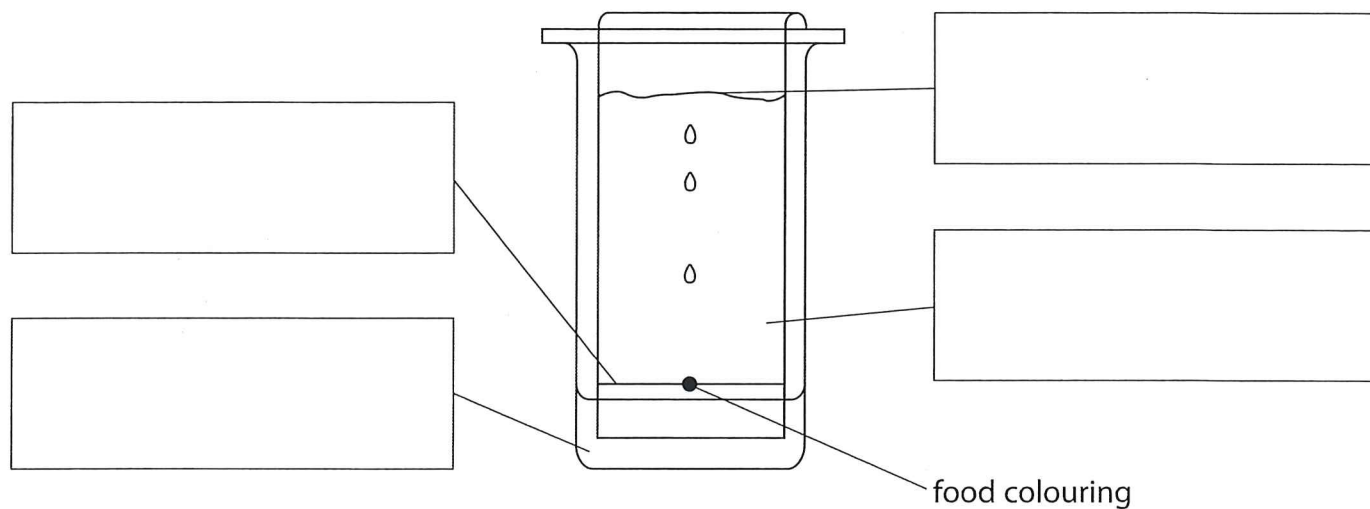


Diagram 1

The box lists some terms used in chromatography.

baseline	chromatography paper
solvent	solvent front

Use the terms from the box to label diagram 1.

(3)



2

(b) Diagram 2 shows a chromatogram produced using four different food colourings, P, Q, R and S.

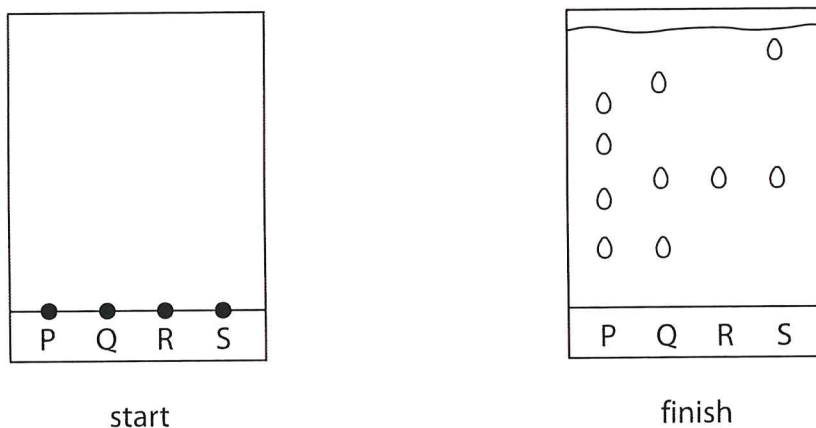


Diagram 2

(i) Which food colouring contains only one dye?

(1)

☐ A P

☐ B Q

☐ C R

☐ D S

(ii) Which food colourings have one dye in common?

(1)

☐ A P, Q and R

☐ B P, R and S

☐ C Q, R and S

☐ D P, Q, R and S

(iii) Explain which food colouring contains the largest number of dyes.

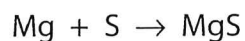
(2)

(Total for Question 1 = 7 marks)

- 2 (b) Magnesium and sulfur react to form an ionic compound.

3

The equation for this reaction is



- (i) Write a word equation for this reaction.

(1)

- (ii) Describe the changes in electronic configurations when magnesium reacts with sulfur to form the ionic compound MgS.

Show the charges on the ions.

(3)

- (iii) Calculate the mass of MgS that forms when 0.30 g of magnesium reacts completely with sulfur.

(3)

mass of MgS = g

(Total for Question 5 = 13 marks)

Carbon dioxide gas forms when dilute nitric acid is added to marble chips.

Q3. The word equation for the reaction is

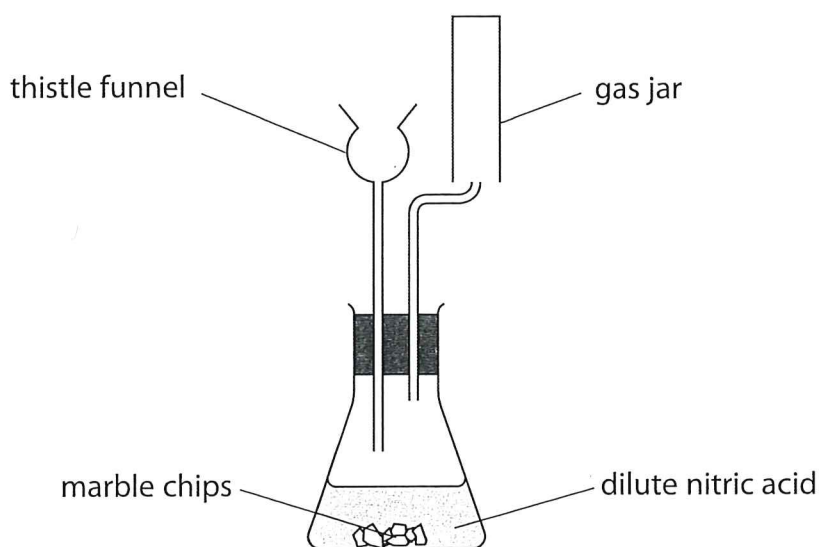
calcium carbonate + nitric acid \rightarrow calcium nitrate + carbon dioxide + water

(a) Write a chemical equation for the reaction.

(2)

(b) A student needs to prepare and collect some carbon dioxide gas, using the reaction between marble chips and dilute nitric acid.

The diagram shows how he sets up his apparatus.



(i) State two reasons why the student's set-up is not suitable for collecting carbon dioxide.

(2)

1

.....

2

.....



Q3 (d) Carbon dioxide contains simple molecules.

The atoms in the molecules are joined by covalent bonds.

(i) State what is meant by the term **covalent bond**.

(2)

(ii) Explain why carbon dioxide has a low boiling point.

(2)

(iii) Complete the diagram, using dots and crosses, to show the arrangement of the electrons in a molecule of carbon dioxide.

Show only the outer shell electrons.

(2)

O C O

(Total for Question 6 = 13 marks)

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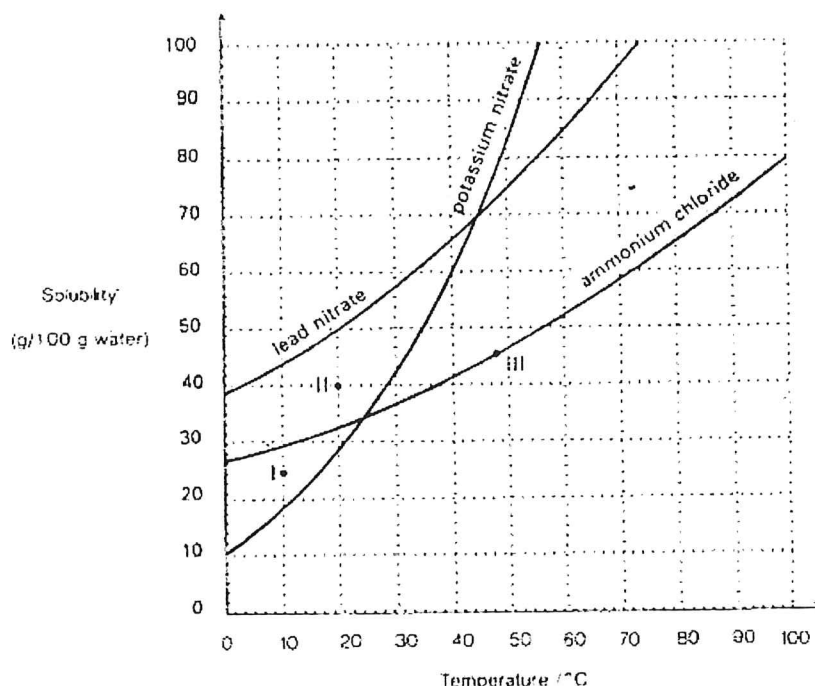
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6

Questions 8-10 refer to the following information:

The graph below shows the solubilities of three different substances in water over a range of temperatures.



8. To completely dissolve 30g of lead nitrate in 60g of water the temperature would have to be at least

- a) 20°C
- b) 30°C
- c) 40°C
- d) 50°C

9. Points I, II and III on the graph represent three solutions of ammonium chloride. Which point represents an unsaturated solution?

- a) I
- b) II
- c) III
- d) none of the points

10. 15g of potassium nitrate was dissolved in 25g of boiling water. If the solution were slowly cooled, the first crystals of potassium nitrate would be expected to appear at

- a) 3°C
- b) 40°C
- c) 56°C
- d) 68°C

7

15. Nitric acid is manufactured commercially through a series of reactions. The first stage of the process involves the following reaction:



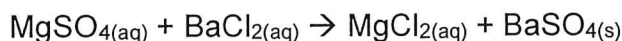
If 18.0 litres of oxygen gas was reacted completely, what **volume** of $\text{NO}_{(g)}$ would be produced?

- (a) 22.5 L
- (b) 12.0 L
- (c) 14.4 L
- (d) 27.0 L

Written section

35 marks

1. For each of the following reactions, write a balanced molecular equation, a balanced ionic equation and write down your observations. If no reaction occurs write no visible change for observations and no reaction for the equations.
- a) Jamie and Jacinta mixed two solutions of salts and wrote the molecular equation below for their results.



Write your **observations** for the reaction stating the colour of reactants and products produced. (1 mark)

Write an ionic equation for the reaction (2 marks)

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- b) potassium phosphate solution was added to a magnesium chloride solution. Write your observations for the reaction stating the colour of reactants and products produced. (1 mark)

Write a molecular equation for the reaction (2 marks)
